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356913

Lt. Richard E. Sloop
Environmental Coordinator
375 ABG/DEEV
Scott Air Force Base, IL 62225-5045

Dear Lt. Sloop:

The purpose of this letter is to follow up our discussion on October 27, 1987 concerning the August 14, 1987 Work Plan and Quality Assurance Project Plan. The attached memo provides guidance which should be followed concerning the use of materials for constructing groundwater monitoring wells.

This Agency has not yet completed a detailed review of the Work Plan. We will not provide comments on the QAPP since the USEPA has indicated that they will perform a detailed review.

Should you require any additional information please contact me.

Sincerely,

Kenneth Miller, Project Manager
Federal Site Management Unit
Remedial Project Management Section
Division of Land Pollution Control

KM:kh/o-1

Enclosure

cc: Terry Ayers
Author
DLPC file w/att.
Amy Blumberg - USEPA w/att. ✓



DATE: October 14, 1986

TO: Land Section, Unit and Regional Managers and Attorneys

FROM: Bill Child, Acting Division Manager

SUBJECT: Guidance Concerning Use of Materials in Constructing Groundwater Monitoring Wells

The information and guidance set forth in this memorandum are to be reviewed in determining the types of materials to be used in the construction of groundwater monitoring wells. Although the RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD) is directed mainly toward interim status facilities, much of the purely technical content, especially regarding site characterization, well design and construction, and assessment of suspected groundwater contamination is relevant to non-RCRA programs as well as permitted facilities.

RCRA SITES

In September, 1986, the USEPA Office of Solid Waste and Emergency Response issued in final form its RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD). This document describes the tasks that each person subject to the groundwater monitoring performance standards of Part 265 and the permit application requirements of Part 270 should be completing and the investigatory techniques that USEPA considers appropriate to complete these tasks.

Section 3.2.1 (page 78) states:

The selection of well casing and screen materials should have been made with due consideration to geochemistry, anticipated lifetime of the monitoring program, well depth, chemical parameters to be monitored and other site-specific factors. Fluorocarbon resins or stainless steel should be specified for use in the saturated zone when volatile organics are to be determined, or may be tested, during a 30-year period.

USEPA reached this conclusion, in part, because of findings that steel, PVC, polyethylene and polypropylene deteriorate in certain environments. These materials are not considered inert because they may adsorb and leach constituents thereby affecting the quality of groundwater samples. Other, non-inert materials such as PVC or galvanized steel could be allowed for casing above the saturated zone, however.

During the comment period on the TEGD, USEPA heard many criticisms concerning required use of inert materials. However, the final version retains the requirement for Teflon, one of three grades of stainless steel (304, 316, 2205), or a material proven to be equally inert. Consequently, the IEPA should follow policy put forth in the September, 1986 RCRA Ground-Water Monitoring Technical Enforcement Guidance Document when reviewing groundwater monitoring programs to determine compliance with the requirements of Parts 265 and 270; the only exception to this may be situations where groundwater contamination has previously been shown and wells are being installed for confirmation purposes at parts per million levels.

CERCLA, SRAPL, IR SITES

Although the TEGD is limited by its terms to sites regulated under RCRA, it should be recognized that the scientific principles and studies upon which the guidance document's conclusions concerning well construction materials are based may apply to groundwater investigations at CERCLA, SRAPL or IR sites. In its Guide to the Selection of Materials for Monitoring Well Construction and Ground Water Sampling (August, 1983), the Illinois State Water Survey observed:

The bulk of the data available on PVC chemical resistance and leaching strongly suggests that there are potential pitfalls involved in the use of PVC well casing in situations where trace chemical species are of interest. At this time, it is clear that PVC exposed to aqueous organic mixtures has the potential to act as a source of foreign organic or metallic compounds in excess of what may occur in predominantly inorganic solutions. Detailed monitoring efforts for organic compounds at the microgram $\cdot L^{-1}$ level may be significantly biased by the sole use of PVC well casing, particularly during the initial study period. Thereafter, the slow diffusive release of PVC additives may be expected to continue for some time. Whether or not these effects significantly bias monitoring results will depend on specific conditions and the actual formulations used. Caution is indicated from the available data on these processes.

The Survey is currently finalizing a report documenting the potential for adsorption and release of organic compounds by PVC under field conditions. Initial results of this comparison testing between PVC and stainless steel show, in four of six cases, significantly lower levels of volatile halogenated and non-halogenated compounds in samples collected from PVC wells. Conclusions of this and other scientific studies concerning the use of PVC, stainless steel and Teflon in groundwater monitoring should be considered in planning monitoring efforts for CERCLA, SRAPL and IR sites. PVC should not be used whenever a monitoring program will require accuracy to the parts per billion concentration level to determine the extent of removal or remedial action, especially in situations where sorbable organics are present

or potentially present. This would apply whether the Agency or a responsible party is installing the monitoring wells. In particular, PVC should not be used where a responsible party claims that no groundwater contamination has occurred. Use of PVC under such circumstances could be useless since it may not generate unbiased information which could allow a proper assessment of such a claim.

On the other hand, in situations where the accuracy of groundwater analyses is only required to be in the parts per million range, PVC may be allowable since any bias introduced by the PVC would not be significant in relation to the level of accuracy desired. However, the anticipated uses of the monitoring program should be carefully evaluated when this decision is made, since long term structural integrity of non-inert materials may be significantly compromised by contaminants being monitored. Above the saturated zone non-inert materials (e.g., PVC, galvanized steel) may be used to complete a monitoring well provided that Galvanic actions are prevented by connecting dissimilar metals with a dielectric bushing. Where PVC will be used it should be of a type which is NSF approved and has screw-type fittings.

Finally, above references to Teflon and stainless steel 304, 316 or 2205 are not intended to exclude consideration of other materials which have been proven to be equally inert.

WCC:MAH:tk:2/10/19

cc: Division File
Gary King